APPENDIX A: POLICY STATEMENT ON PROCEDURES FOR GRANTING GRADUATE DEGREES IN MEDICINAL CHEMISTRY

The Doctor of Philosophy in Medicinal Chemistry

1. Course and Credit Requirements

Core Courses

- Medicinal Chemistry: Research Techniques and Principles (16:663:501) 3 Credits
- Principles of Drug Design (16:663:502) 3 Credits
- Advanced Organic Chemistry I (16:160:511) 3 Credits
- Interpretation of Organic Spectra (16:160:515) 3 Credits
- Modern Synthetic Organic Chemistry (16:160:503) 3 Credits
- Molecular Biology and Biochemistry I (16:115:511) 3 Credits
- Independent Research Proposal (16:663:540) 3 Credits
- Seminar in Medicinal Chemistry (16:663:601,602) 2 Credits

Total 23 Credits

Elective Courses

15 Credits

Total Course Credits Required 38 Credits

Research in Medicinal Chemistry (16:663:701,702) 34 Credits

Total Credits Required 72 Credits

Recommended Elective Courses

- Strategies and Tactics in Synthetic Medicinal Chemistry (16:663:504) 3 Credits
- Drugs: Structure and Function (16:663:505) 3 Credits
- Analytical Medicinal Chemistry (16:663:511) 3 Credits
- Laboratory Rotation in Medicinal Chemistry (16:663:508) 3 Credits
- Special Topics in Medicinal Chemistry (16:663:607,608) 3 Credits
- Independent Study in Medicinal Chemistry (16:663:610,611) BA
- Current Topics in Medicinal Chemistry (16:663:612,613) 1 Credit
- Chemistry of Heterocyclic Compounds (16:160:501) 3 Credits
- Advanced Organic Chemistry II (16:160:512) 3 Credits
- Advances in Organic Chemistry – Principles of Organic Synthesis (16:160:504, sec. 03) 3 Credits
- Advances in Organic Chemistry – Intermediate 2D (16:160:504, sec. 02) 3 Credits
- NMR Spectroscopy
- Advanced Organic Synthesis (16:160:506) 3 Credits
- Special Topics in Inorganic Chemistry - Survey of Modern Inorganic Chemistry (16:160:579) 3 Credits
- Advanced Inorganic Chemistry (16:160:602) 3 Credits
- Introduction to Molecular Modeling (16:160:510) 3 Credits
Bioorganic Mechanisms (16:160:518) 3 Credits
Principles of Organometallic Chemistry (16:160:575) 3 Credits
Introduction to Radio- and Nuclear Chemistry (16:160:530) 3 Credits
Molecular Biology and Biochemistry I (16:115:511) 3 Credits
Molecular Biology and Biochemistry II (16:115:512) 3 Credits
Proteins and Enzymes (16:115:508) 3 Credits
Biochemical Separations (16:115:552) 3 Credits

Courses not listed above which are relevant to the student's research may be taken as electives only with permission of the student's advisor.

Grades

Students are required to maintain a grade point average (GPA) of 3.0 or better. In the event that a student's GPA drops below 3.0, that student is placed on academic probation and is allowed one, or a maximum of two, additional semesters, at the discretion of the Graduate Committee, to raise his/her GPA to 3.0. Students who do not meet this requirement may be subject to dismissal from the Graduate Program in Medicinal Chemistry or other sanctions as recommended by the Graduate Committee.

Seminars

Students register for Seminar in Medicinal Chemistry (16:663:601,602) only in the semester in which they will present their seminar(s). It is expected however, that all full-time students are to attend all seminars, even when not registered. To enforce this policy attendance is recorded at each seminar. Students having two or more unexcused absences during a semester will be required to register for, and present, one additional seminar during the following semester. This seminar will be graded and will be factored into your GPA. Any student that must miss a seminar for a valid reason must notify the Seminar Coordinator in advance.

Registration, Credit, and Residence Requirements

To be considered as full-time, students must register for a minimum of 9 credits per semester. Advanced graduate students, who have completed all credit requirements for the Ph.D., need register for only 1 credit per semester to be considered as full-time (as well as, when appropriate, 6 E-credits for a TA or GA). A minimum residency of one academic year as a full-time student is required for the Ph.D. degree.

2. Advisory Committee

Students entering the graduate program will be advised by the Chairman of the Admissions Committee unless they have already selected a research advisor. All students should select a research advisor by the end of their second semester. Acceptance into a particular research program is at the discretion of the research advisor.

Prior to completing the Independent Research Proposal the student must select a Dissertation Committee. A Ph.D. Dissertation Committee is comprised of three (full or associate) members of the Graduate Program in Medicinal Chemistry (including the research advisor, who must be a full member) and one individual from outside of the program. The outside member must hold a Ph.D. degree and in no instance can this individual be a graduate from the research group of any
of the committee members. Once the Dissertation Committee has been formulated, it must be approved by the Program Director.

In the event that a member of a student's Dissertation Committee resigns, the student together with the research advisor must select a suitable replacement subject to approval by the Program Director. If the student's research advisor leaves the University, a new advisor will be assigned from the faculty of the Graduate Program in Medicinal Chemistry by the Program Director in consultation with the student. A member of the student's Dissertation Committee may be assigned the responsibility of monitoring the completion of the on-going research project.

A student may request to change his/her research advisor. This request must be reviewed and approved by the Program Director. In the event that there is a change in the student's research advisor a new Dissertation Committee may be selected. Both the new advisor and the Program Director must approve the new committee.

3. Annual Evaluation

A student's progress in course work and research will be formally evaluated by the student's research advisor on an annual basis following the Spring semester. The evaluation will encompass performance in exams, course work, research progress, dissertation or thesis writing, teaching and research assistantships, and other aspects of the student's professional development. The student is required to submit a one or two page written summary of progress in course work, research accomplishments and goals to the research advisor. The student will then schedule a meeting with the advisor to discuss the evaluation and will be given the opportunity to respond in writing to any comments within the evaluation. Copies of the evaluation will be submitted to the Program Director and to members of the Dissertation Committee.

Based upon these evaluations the advisor may recommend that the student continue in the program if adequate research progress and performance in coursework is demonstrated. In the event that inadequate progress or effort in research is demonstrated, the advisor may require that the student complete the requirements for a Master's Degree as a final degree. In extreme cases where indifference to the research project or coursework is demonstrated the advisor may recommend that the student be dismissed from the program. Recommendations by an advisor for a change in degree status must be approved by the Program Director and forwarded to the Graduate School, New Brunswick. A recommendation for dismissal from the Program must be submitted to the Program Director who will forward this formal request to the Dean of the Ernest Mario School of Pharmacy for action.

4. Evaluation for the Ph.D. Degree

Requirements for Candidacy

To be admitted into candidacy for the Ph.D. Degree the student must satisfy the following requirements:

- Completion of all required core and elective course work
- Minimum cumulative grade point average of 3.0
- Received a grade of B or better for the oral examination/independent research proposal
Oral Examination/Independent Research Proposal

Before being admitted into candidacy for the Ph.D. degree the student must register for Independent Research Proposal (16:663:540). The student must prepare a research proposal on a topic not directly related to the student’s research project. This proposal must be written to conform to the guidelines for an NIH research proposal. While the student may consult with his/her research advisor concerning the topic for the proposal, the student must prepare the proposal with no assistance or editing from the advisor. Following completion of the written proposal the student is required to defend the proposal to his/her Dissertation Committee. The student must schedule a date and time which is agreeable to all of the committee members and must provide copies of the proposal to each committee member at least two weeks before the oral examination. During the oral examination all areas of the student's training may be explored. The committee will decide on a letter grade for the proposal. In the event of a failing grade, the student will be permitted to retake the oral examination once more with the revised or new proposal as recommended by the committee. A student that fails twice will be required to change their degree status to a terminal M.S. degree.

Dissertation Research Proposal

Within three months of admittance into candidacy for the Ph.D. degree, the student will schedule a meeting of his/her Dissertation Committee. At the meeting the student will provide a brief overview of the background of the research project he/she is involved with and will then outline the progress to date and future direction that he/she anticipates the project to take. The members of the committee will have an opportunity at this meeting to comment on and make suggestions related to the research project. The committee will also provide feedback to the student as to what will constitute a sufficient amount of research for completion of the Ph.D. Dissertation. These comments will be compiled by the advisor and communicated in writing to the student and to the committee.

Ph.D. Dissertation and Defense

Upon completion of the research project the student will prepare a Ph.D. Dissertation in consultation with the advisor. Copies of the completed dissertation will then be distributed to the members of the committee at least two weeks before the date scheduled for the oral defense. The oral defense must be scheduled at least one week before the deadline established by the Graduate School for submission of credentials. At the defense the student will present an oral presentation outlining the entire research project. Following this presentation the members of the committee will conduct an examination of the student focusing primarily on the student’s research, although other areas of the student’s training may be explored. At the conclusion of the defense the committee will meet to determine whether the student passed or failed the exam and will immediately convey this decision to the student. The student is considered to have passed the exam if at least three members of the committee vote for approval. The committee may recommend that modifications or corrections be made to the dissertation before final approval is given. A student who does not satisfactorily complete the dissertation defense cannot schedule a second one until the following semester.
The Master of Science Degree in Medicinal Chemistry

- Thesis Option (Full-Time Students)
- Non-Thesis Option* (Part-Time Students)

1. Course and Credit Requirements

Core Courses

- Medicinal Chemistry: Research Techniques and Principles (16:663:501) 3 Credits
- Principles of Drug Design (16:663:502) 3 Credits
- Advanced Organic Chemistry I (16:160:511) 3 Credits
- Interpretation of Organic Spectra (16:160:515) 3 Credits
- Modern Synthetic Organic Chemistry (16:160:503) 3 Credits
- Seminar in Medicinal Chemistry (16:663:601 or 602) 1 Credit

**Total Core Course** 16 Credits

Elective Courses (see pages 1 and 2) 9 Credits*

*Students opting for the Non-Thesis Option must take two additional 3-credit courses in place of the research requirement. The student must also write a short, focused paper reviewing a narrow area of Medicinal Chemistry. The paper must be 15-20 double-spaced pages, excluding references and footnotes. The topic is to be selected in consultation with the student’s advisor. All papers must be written in grammatically-correct English and submitted to the advisor and other members of the committee.

**Total Course Credits Required** 25 Credits*

*(31 Credits for the Non-Thesis Option)

Research in Medicinal Chemistry (16:663:701, 702) 6 Credits*

*(Not required for Non-Thesis Option)

**Total Credits Required** 31 Credits

Grades

Students are required to maintain a grade point average (GPA) of 3.0 or better. In the event that a student's GPA drops below 3.0, that student is placed on academic probation and is allowed one or a maximum of two additional semesters, at the discretion of the Program Director, to raise his/her GPA to 3.0. Students who do not meet this requirement may be subject to dismissal from the Graduate Program in Medicinal Chemistry or other sanctions as recommended by the Graduate Committee.

Seminars

Students register for Seminar in Medicinal Chemistry (16:663:601,602) only in the semester in which they will present their seminar(s). It is expected however, that all full-time students are to attend all seminars, even when not registered. To enforce this policy attendance is recorded at each seminar. Students having two or more unexcused absences during a semester will be required to register for, and present, one additional seminar during the following semester. This
seminar will be graded and will be factored into your GPA. Any student that must miss a seminar for a valid reason must notify the Seminar Coordinator in advance.

Registration and Credit Requirements

To be considered as full-time, students must register for a minimum of 9 credits per semester. Advanced graduate students, who have completed all credit requirements for the M.S. degree, need register for only 1 credit per semester to be considered as full-time (as well as, when appropriate, 6 E-credits for a TA or GA).

2. Advisory Committee

Students entering the graduate program will be advised by the Chairman of the Admissions Committee unless they have already selected a research advisor. All students are required to select a research advisor by the end of the second semester. Acceptance into a particular research program is at the discretion of the research advisor.

Students pursuing a M.S. degree must select a Thesis Committee within one semester after selecting an advisor. A Thesis Committee is comprised of three members (full or associate) of the Graduate Program in Medicinal Chemistry (including the research advisor, who must be a full member). Once the Thesis Committee has been formulated, it must be approved by the Program Director.

In the event that a member of a student's Thesis Committee resigns, the student together with the research advisor must select a suitable replacement subject to approval by the Program Director. If the student's research advisor leaves the University, a new advisor will be assigned from the faculty of the Graduate Program in Medicinal Chemistry by the Program Director in consultation with the student. A member of the student's Thesis Committee may be assigned the responsibility of monitoring the completion of the on-going research project.

A student may request to change his/her research advisor only once. This request must be reviewed and approved by the Program Director. In the event that there is a change in the student's research advisor a new Thesis Committee may be selected. The new committee must be approved by the new advisor and the Program Director.

Students pursuing a M.S. degree under the Non-Thesis Option must select a Committee prior to submitting the required written paper.

3. Annual Evaluation

A student's progress in course work and research will be formally evaluated by the student's research advisor on an annual basis following the Spring semester. The evaluation will encompass performance in exams, course work, research progress, dissertation or thesis writing, teaching and research assistantships, and other aspects of the student's professional development. The student is required to submit a one or two page written summary of progress in course work, research accomplishments and goals to the research advisor. The student will then schedule a meeting with the advisor to discuss the evaluation and will be given the opportunity to respond in writing to any comments within the evaluation. Copies of the evaluation will be submitted to the Program Director and to members of the Thesis Committee.
Based upon these evaluations the advisor may recommend that the student continue in the program if adequate research progress and performance in coursework is demonstrated. In the event that inadequate progress or effort in research is demonstrated the advisor, with approval of the Graduate Committee and Program Director, may require that the student complete the requirements for a non-Thesis Master's Degree as a final degree. Students who have been recommended to finish the requirements for the non-thesis M.S degree are required to complete 6 additional course credits (for a total of 31 course credits). These must come from the list of approved electives (see pages 1 and 2). In addition, the student is required to write a short, focused paper reviewing a narrow area of medicinal chemistry. The paper must be 15-20 double-spaced pages, excluding references and footnotes. The topic is to be selected in consultation with the student’s advisor. All papers must be written in grammatically-correct English and submitted to the advisor and other members of the committee. In extreme cases where indifference to the research project or coursework is demonstrated the advisor may recommend that the student be dismissed from the program. Recommendations by an advisor for a change in degree status must be approved by the Program Director. A recommendation for dismissal from the Program must be submitted to the Program Director who will forward this formal request to the Dean of the Ernest Mario School of Pharmacy for action.

4. Evaluation for the M.S. Degree

Upon completion of the course requirements and research project the student will prepare a M.S. Thesis in consultation with the advisor. Copies of the completed thesis will then be distributed to the members of the committee at least two weeks before the date scheduled for the oral defense. The oral defense must be scheduled at least one week before the deadline established by the Graduate School for submission of credentials. At the defense the student will present an oral presentation outlining the entire research project. Following this presentation the members of the committee will conduct an examination of the student focusing primarily on the student’s research, although other areas of the student’s training may be explored. At the conclusion of the defense the committee will meet to determine whether the student passed or failed the exam and will immediately convey this decision to the student. The student is considered to have passed the exam if at least two members of the committee vote for approval. The committee may recommend that modifications or corrections be made to the thesis before final approval is given. A student who does not satisfactorily complete the thesis defense cannot schedule a second one until the following semester.

Students that opt for the Non-Thesis M.S. degree, after completion of all coursework and seminar(s), will write a short, focused paper reviewing a narrow area of medicinal chemistry. The paper must be 15-20 double-spaced pages, excluding references and footnotes. The topic is to be selected in consultation with the student’s advisor. All papers must be written in grammatically-correct English and submitted to the advisor and other members of the committee. A date will then be set (at least two weeks later) in which the student will appear before his/her committee to answer questions relating to the paper and his/her overall knowledge of medicinal chemistry (oral Comprehensive Masters Examination). At the conclusion of the exam the committee will meet to determine whether the student passed or failed and will immediately convey this decision to the student. The student is considered to have passed the exam if at least two members of the committee vote for approval. The committee may recommend that modifications or corrections be made to the paper before final approval is given. A student who does not satisfactorily complete the oral exam cannot schedule a second one until the following semester.